

**DESCRIPTION OF TWO NEW AND UNUSUAL STEGOCEPHALID SPECIES
(CRUSTACEA: PERACARIDA: AMPHIPODA: STEGOCEPHALIDAE)
FROM HEARD ISLAND AND THE EAST CHINA SEA.**

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Summary

BERGE, J. & VADER, W. Description of two new and unusual stegocephalid species (Crustacea: Peracarida: Amphipoda: Stegocephalidae) from Heard Island and the East China Sea. *Trans. R. Soc. S. Aust.* 128(1), 1-11, 31 May, 2004.

Two new stegocephalid (Amphipoda) species are described: *Mediterexis macho* and *Stegocephalina wolf*. One of the species, *Mediterexis macho*, is the very first record of a stegocephalid from the China Sea, whereas *Stegocephalina wolf* was collected North of Heard Island in the Southern Ocean.

KEY WORDS: Amphipoda, Stegocephalidae, *Mediterexis macho* sp.nov., *Stegocephalina wolf* sp.nov.

Introduction

The Antarctic fauna of stegocephalid species was reviewed by Berge *et al.* in 2000, in which a total of 19 species were recognised. Since then two additional stegocephalid species have been recorded from the area, excluding the new species *Stegocephalina wolf* reported herein. Thus, the Antarctic stegocephalid fauna currently consists of 22 known species belonging to 11 genera. The second new species herein described, is the first record of a stegocephalid species from the China Sea.

A phylogenetic analysis of the family Stegocephalidae was presented as part of a recent revision of the group (Berge & Vader 2001). Based upon this analysis, a new classification at the generic level was outlined. As the classification at both generic and subfamily levels falls outside the scope of this paper, the two new species (*Mediterexis macho* sp.nov. and *Stegocephalina wolf* sp.nov.) described herein are treated within the framework of that classification. Especially for *Mediterexis macho*, the generic position may well be altered in the future (see also below).

Material and Methods

This study is based upon material from the South Australian Museum (SAM). All dissected appendages were mounted in polyvinyl-lactophenol and stained with rose-bengal. These appendages were drawn using a Leica compound microscope equipped with a drawing-tube, while the habitus-drawings were

made using a Leica dissecting microscope. Mature and immature females were distinguished from males by the presence of oostegites. The classification of setae and setae-groups follows that of Berge (2001). All scales attached to the figures are 0.1 mm unless otherwise stated.

Symbols

A1-2: Antenna 1-2; EP3: Epimeral plate 3; IP: Inner plate; L: Labium; LBR: Labrum; LMND: Left mandible; MX1: Maxilla 1; MX2: Maxilla 2; MXP: Maxilliped; OP: Outer plate; P1-7: Pereopods 1-7; PLP: palp; RMND: Right mandible; ST: Setal teeth on the first maxilla; T: Telson; U1-3: Uropods 1-3.

Results and Taxonomy

The present study is based entirely on material provided from the collections of the South Australian Museum. The material comprised, in addition to the two new species reported herein, a total of 3 species: *Glorandaniotes sandroi* Berge & Vader, 2003a, *Parandania boeckii* Stebbing, 1888 and *Tetradeion crassum* (Chilton, 1883). The three above mentioned species were all found in Australia, whereas the two remaining, *Mediterexis macho* sp.nov. and *Stegocephalinae wolf* sp.nov., were collected from the East China Sea and Heard Island, respectively.

Key to the 22 species known from the Antarctic and sub-Antarctic regions:

1. Pereopod 6 basis expanded, posterior margin convex (2)
- Pereopod 6 basis weakly expanded, posterior margin straight or concave (17)
- Pereopod 6 basis not expanded, about as broad as pereopod 5 basis (21)

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2. Uropod 3 rami obsolescent or absent
Stegocephalina pacis
- Uropod 3 both rami well developed (3)
3. Telson entire (4)
- Telson cleft (8)
4. Antennae subequal (5)
- Antenna 2 elongate, longer than antenna 1
Parandania boeckii
5. Antenna 1 flagellum with 5 articles *Andaniexis olli*
- Antenna 1 flagellum more than 10 articles (6)
6. Antennae elongate *Parandania boeckii* (juveniles)
- Antennae not elongate (7)
7. Labrum symmetrical, both lobes strongly reduced *Parandania gigantea*
- Labrum asymmetrical, right lobe large, left lobe strongly reduced *Parandania nonhiata*
8. Rostrum weakly developed (9)
- Rostrum large and distinct *Stegocephalus rostrata*
9. Coxa 1 anterior margin convex (10)
- Coxa 1 anterior margin with a deep invagination
Stegocephalus waitlingi
10. Telson longer than broad, triangular and pointed (11)
- Telson about as long as broad, not pointed (13)
11. Mouthparts not elongate and not forming a conical bundle (12)
- Mouthparts elongate, forming a conical bundle projecting well below coxae *Stegocephalina wolf* sp.nov.
12. Epimeral plate 3 posteroventral corner acute, with one notch *Stegocephalus kergueleni*
- Epimeral plate 3 posteroventral corner rounded, erenulated Genus *Pseudo* (see below)
13. Antenna 1 flagellum article 1 shorter or about as long as peduncle (14)
- Antenna 1 flagellum article 1 distinctly longer than peduncle (15)
14. Coxae 1-3 broad and overlapping, coxa 4 posterior lobe exceeding pereon segment 6 *Stegosoladidus antarcticus*
- Coxae 1-3 narrow, not overlapping, coxa 4 posterior lobe not exceeding pereon segment 6 *Andaniotes linearis* (immature)
15. Maxilla 2 gaping and geniculate, epimeral plate 3 posteroventral corner produced and with teeth Genus *Pseudo* (see below)
- Maxilla 2 not gaping and geniculate, epimeral plate 3 posteroventral corner weakly produced, without teeth (16)
16. Antenna 1 flagellum with 4 articles *Andaniotes pseudolinearis*
- Antenna 1 flagellum with more than 10 articles
Parandania boeckii
17. Uropod 3 outer ramus 2-articulate (18)
- Uropod 3 outer ramus 1-articulate
Stegosoladidus ingens
18. Telson cleft (19)
- Telson entire *Andaniella integripes*
19. Pereopod 6 basis posteromedially with 2-3 long plumose setae (20)
- Pereopod 6 basis posteromedially with a row of short robust setae *Andaniotes linearis*
20. Coxae 1-3 broad and overlapping, maxilliped inner plate with 2 nodular setae
Stegosoladidus debroyeri
- Coxae 1-3 narrow, not overlapping, maxilliped inner plate with 4 nodular setae *Andaniotes pooh*
21. Telson entire (22)
- Telson cleft (23)
22. Telson short, pereopod 4 subchelate, pereopod 7 well developed *Parandaniexis dewitti*
- Telson long, pereopod 4 simple, pereopod 7 reduced *Tetradeion crassum*
23. Epistomal plate large, conspicuous
Austrophippisia unihamata
- Epistomal plate absent *Schellenbergia vanhoeffeni*

Remarks to the key

The key is rewritten and updated from that presented by Berge *et al.* (2000) to include both the new *Stegocephalina wolf* sp.nov. (see below) and the two *Pseudo* Berge & Vader, 2001 species that were described, but not given a formal scientific name in Berge & Vader (*submitted*). Furthermore, all generic names in the key are updated according to the outlined classification of all stegocephalid taxa in the revision of the family by Berge & Vader (2001).

Subfamily Andaniexinae Berge & Vader, 2001.

Genus *Mediterexis* Berge & Vader, 2001.

Mediterexis macho sp. n. (Figs 1-3)

Holotype

Male, 4 mm (SAM C6054), East China Sea (30° 06' N, 130° 35' E), 02.07.1966. Unique.

Etymology

The name refers to its densely setose peduncles of the antennae, compared to all other stegocephalid taxa.

Diagnosis

Antennae subequal, peduncles setose, accessory flagellum longer than antenna 1 flagellum article 1. Epistome laterally produced, epistomal plate present. Mandibles with transverse smooth incisors, left

¹ The validity of this genus is discussed in Berge & Vader (*submitted*). To avoid any nomenclatory complications, the classification according to Berge & Vader 2001 is utilised.

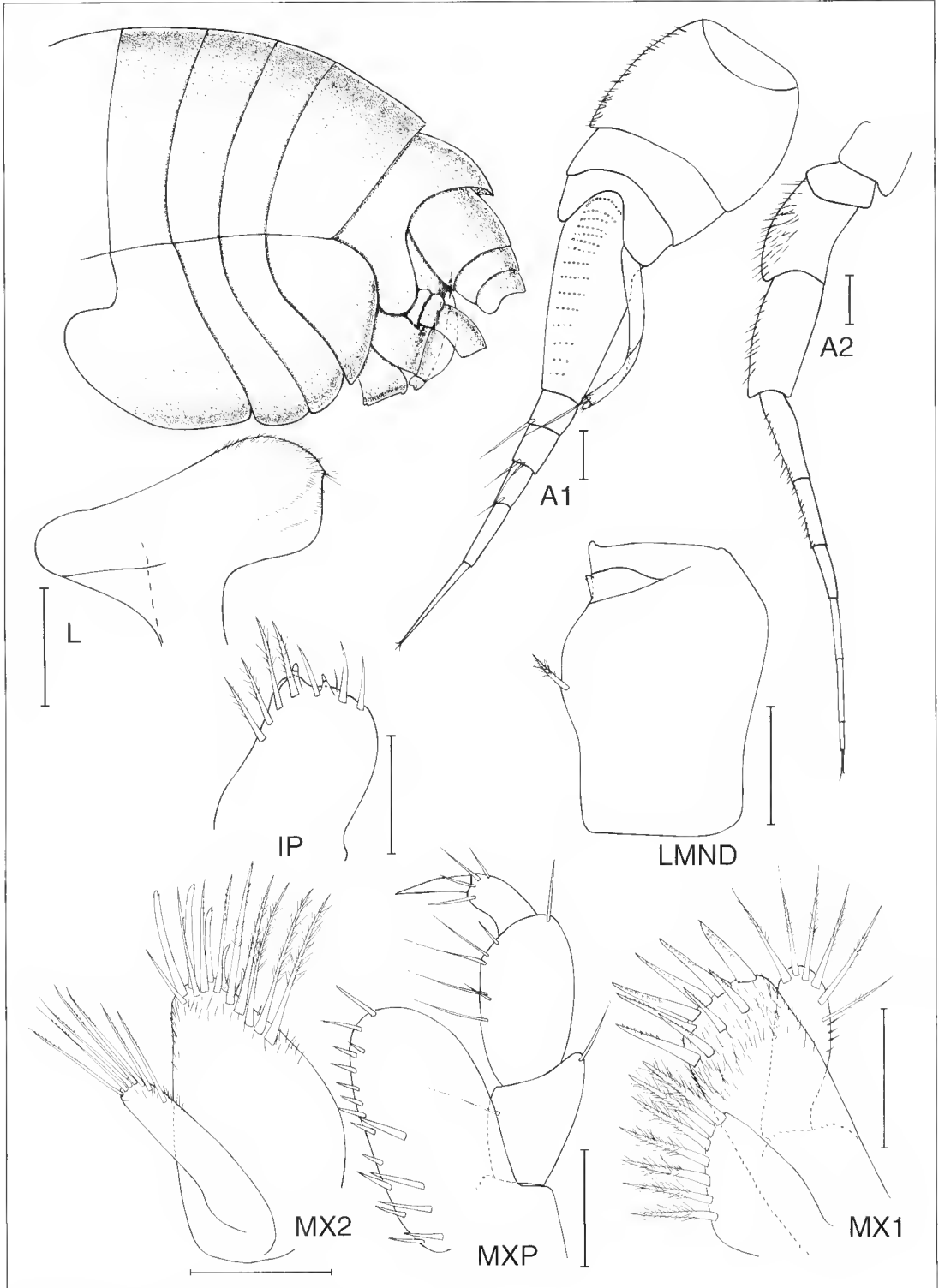


Fig. 1. *Mediterexis macho* sp. nov. Holotype.

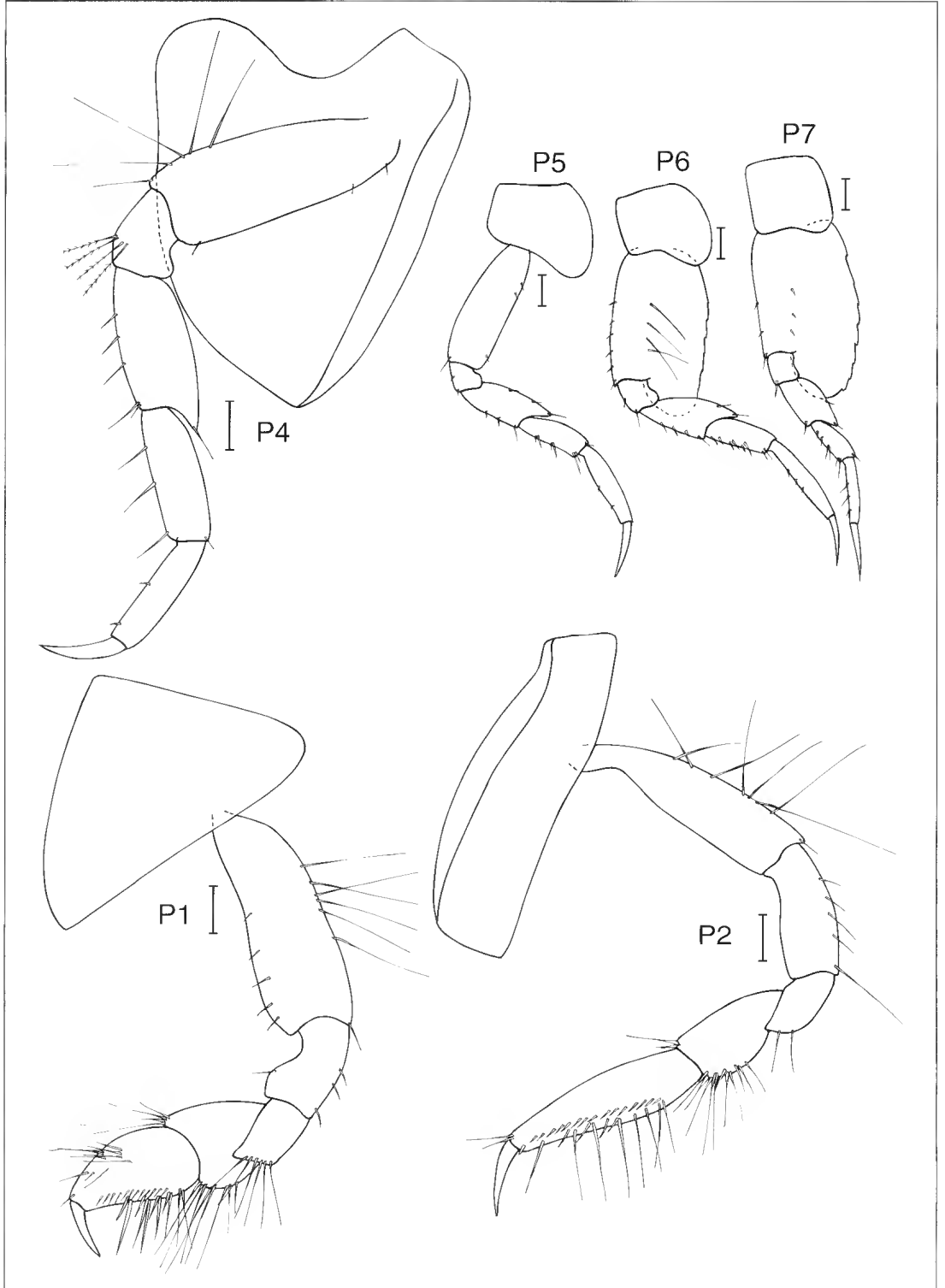


Fig. 2. *Mediterexis macho* sp.nov. Holotype.

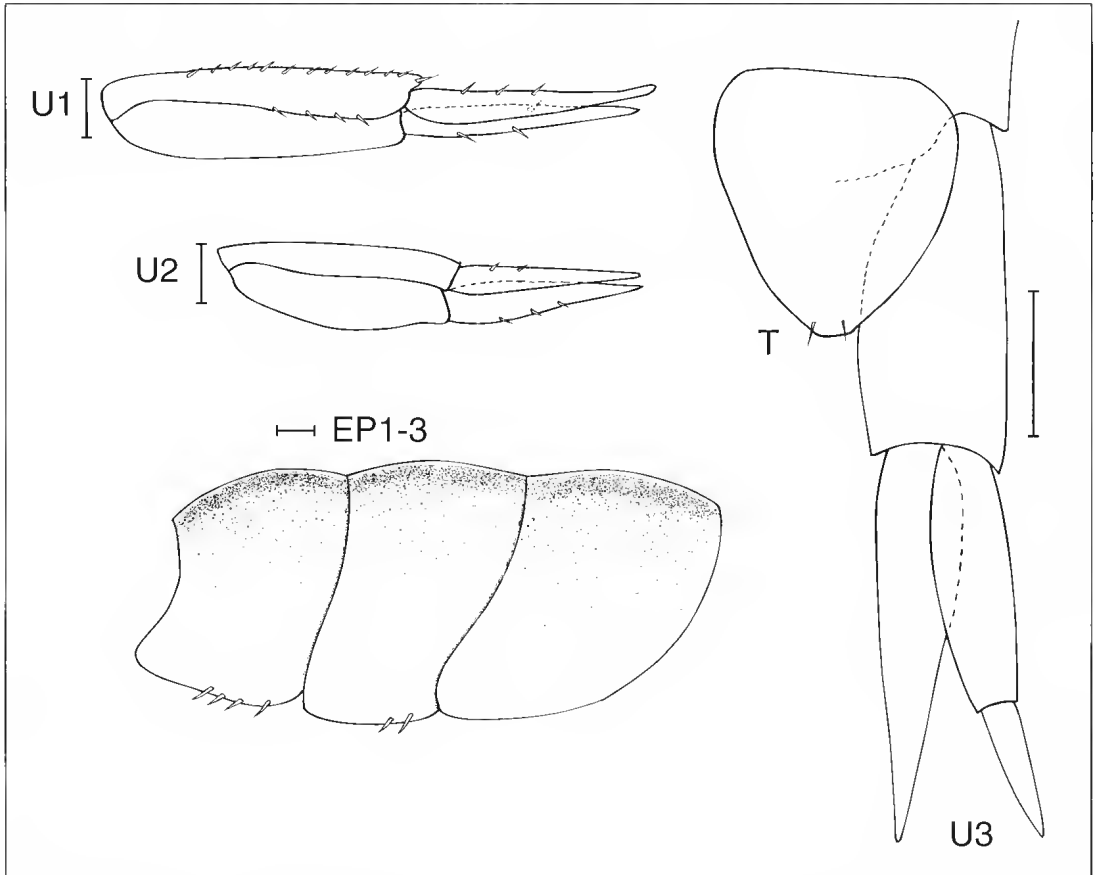


Fig. 3. *Mediterexis macho* sp.nov. Holotype.

lacinia mobilis weakly toothed. Maxilla 2 not gaping and geniculate. Labrum shorter than broad. Pereopod 6 basis posteriorly conspicuously expanded. Uropod outer ramus two-articulate. Telson entire.

Description

Head: Head retractable under pereonite 1. Rostrum rudimentary.

Antennae: Accessory flagellum longer than flagellum article 1, articulation present. Antenna 2 peduncle article 3 short, about as long as broad. Peduncle article 4 shorter than article 5.

Epistome: Epistome laterally produced and rectangular, with a long ridge on each side. Epistomal plate (medial keel) produced into a small elongate medial ridge covering the entire epistome.

Mouthparts: Mouthparts not elongate.

Mandibles with incisor transverse, smooth. Left lacinia mobilis present, weakly toothed and distally not produced.

Maxilla 1 palp articulation absent, distally with long pappose setae. Outer plate distally rounded, ST

in a 6/3 arrangement with two parallel rows: First row with ST 1-5 present, ST 6 absent and ST 7 present. Second row with ST A-C present. Inner plate with shoulder weakly developed, setae pappose.

Maxilla 2 outer plate not gaping and geniculate, setae distally straight. Inner plate with setae-row A and B appressed. Row B with first 3 setae differentiated from the other setae. Row C present, row D absent.

Maxilliped palp 4-articulate, article 2 not produced distally. Articles 1-3 with long slender setae. Inner plate distally with inner corner weakly produced, 2 nodular setae present. Outer plate with inner and outer setae-row present, both with robust slender setae. Distal setae-group absent.

Labrum shorter than broad, both lobes reduced.

Labium distally broad, distal finger absent.

Pereopods and coxae: Coxal plates and basis of the pereopods smooth. Coxae 1-3 contiguous.

Pereopod 1 coxal plate about as deep as basis, basis anterior margin weakly expanded. Pereopod 1

propodus subovate, posterior submarginal row of setae present.

Pereopod 2 ischium elongate, distal posterior margin without plumose setae. Propodus subrectangular, posterior submarginal row of robust setae present.

Pereopod 4 coxa locking-structure absent. Basis with long setae on posterior margin, distally without plumose setae. Ischium with long plumose setae on distal posterior margin.

Pereopod 6 basis posteriorly expanded, medially with a row of long plumose setae. Posterior margin of basis serrate.

Pereopod 7 general appearance similar to pereopod 6. Basis medially with a row of short simple setae.

Oostegites and gills: Gills present on pereopods 2-7. Oostegites unknown.

Pleonites: Pleonites 1-3 dorsally smooth. Epimeral plate 3 weakly produced and rounded posteriorly, serrations absent.

Urosome: Males with urosome not enlarged. Articulation between urosomites 2 and 3 present. Uropod 1 outer ramus with short robust setae on outer and inner margin, inner ramus with robust setae on inner margin. Uropod 2 outer ramus outer margin with robust setae, inner ramus inner margin with robust setae. Uropod 3 peduncle longer than telson, outer ramus 2-articulate. Rami without setae. Telson entire and rounded distally, submarginal setae on apex present.

Females

Unknown.

Distribution

Known only from the type locality.

Remarks

This species can easily be distinguished from all other stegocephalid taxa by the combination of 1) a laterally produced epistome, 2) the weakly differentiated last two pairs of pereopods, 3) entire telson and 4) the bi-articulate outer ramus of the third uropod. The presence of a not gaping and geniculate maxilla 2 and the smooth mandibular incisors indicate unequivocally that the species is a true member of the subfamily Andaniexinae Berge & Vader, 2001. However, it is not possible to assign it unequivocally to any of the genera of the family: its telson, mandibles and maxilliped resemble closely those found in the three genera *Andaniexis* Stebbing, 1906, *Mediterexis* Berge & Vader, 2001 and *Parandaniexis* Schellenberg, 1929. These three genera are also the only genera within the subfamily that do not possess a locking-process on the inner side anteriorly on the fourth coxa (see Berge & Vader 2003b), but the first maxilla and the weakly differentiated last two pairs of

pereopods have close affinities to those found in the genus *Andaniotes* Stebbing, 1897. In addition, the second maxilla, with its slightly elongate outer plate and the arrangements of setae-rows A-D has closest affinities to the subfamily Andaniopsinae Berge & Vader, 2001. Thus, the assignment of this species to *Mediterexis* seems, at best, a temporary decision. However, as the phylogeny of the family and allocation of its species to genera fall outside the scope of this paper, this species is herein placed in *Mediterexis* based on the close affinities to that genus in the maxilliped, mandibles and epistome. This last character (see Fig 4, *Mediterexis mimonectes* (Ruffo, 1975) was used in the phylogenetic analysis (Berge & Vader 2001), but closer examination has revealed that the epistome shows a more complex set of characters than previously assumed (Berge, *in prep.*). As currently only one single specimen of this new species exists, its epistome was not available for SEM examination. However, examination under the light microscope gives reason to suspect that these two congeners possess a very similar epistome; that of *M. mimonectes* is herein illustrated.

Subfamily Stegocephalinae Dana, 1852
Genus *Stegocephalina* Stephensen, 1925
Stegocephalina wolf sp. n. (Figs 5-7)

Holotype

Male 5mm (SAM C6055), Southern Ocean just North of Heard Island (52° 18' S, 73° 45' E), 245 m. col. W. Zeidler, 13.06.1990, "Aurora Australis" st. 65. Sample taken from a sponge. Unique.

Etymology

This species is named after the collector, Dr Wolfgang Zeidler, Adelaide.

Diagnosis

Rostrum rudimentary. Antennae subequal, accessory flagellum shorter than antenna 1 flagellum article 1. Epistome laterally produced, epistomal plate present. Mouthparts forming a conical bundle. Mandibular incisors lateral, toothed. Maxilla 2 gaping and geniculate. Labrum elongate. Pereopod 6 basis posteriorly conspicuously expanded. Uropod 3 outer ramus two-articulate. Telson cleft.

Description

Head: Head retractable under pereonite 1. Rostrum rudimentary

Antennae: Accessory flagellum shorter than flagellum article 1, biarticulate. Antenna 2 peduncle article 3 short, about as long as broad. Peduncle article 4 longer than article 5.

Epistome: Epistome laterally produced, long and triangular. Epistomal plate (medial keel) produced

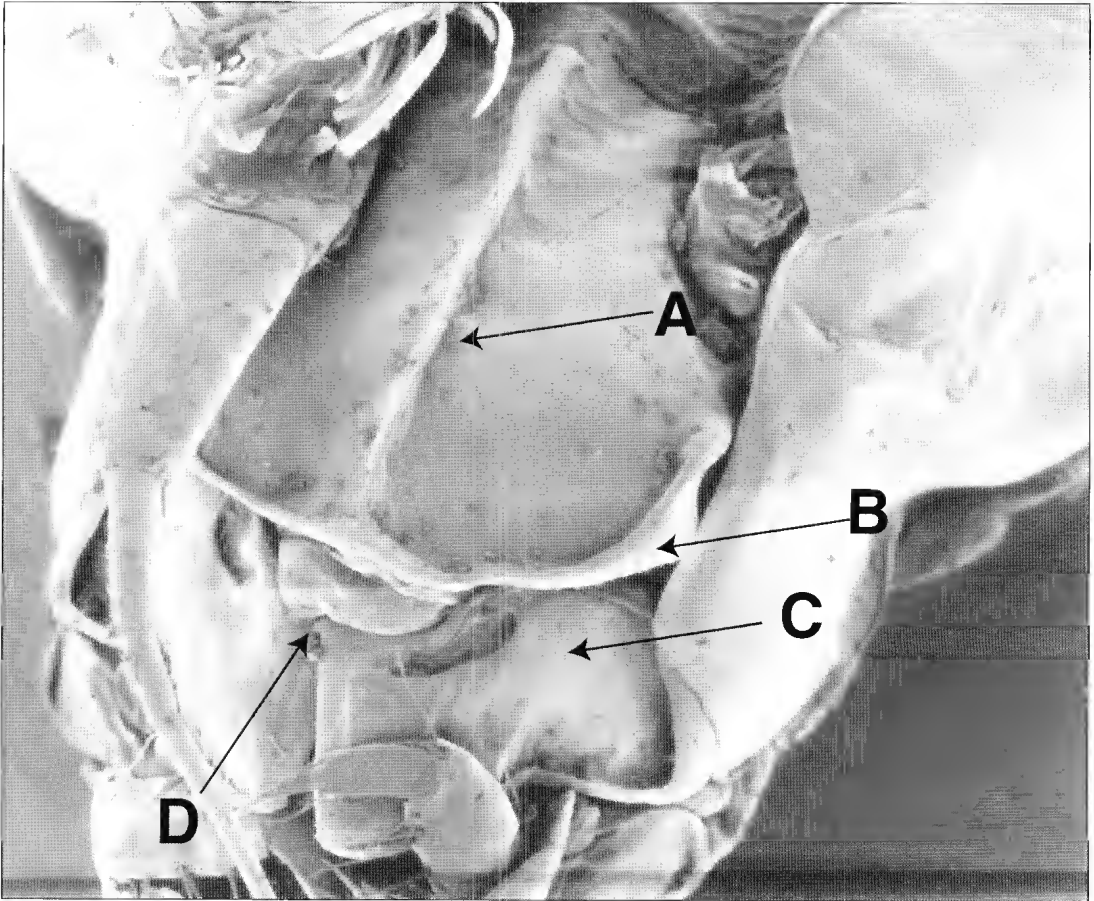


Fig. 4. *Mediterexis mimonectes* Ruffo, 1975. SEM picture of the epistome. A: Epistomal plate, B: Epistome laterally produced, C: Left mandible, D: Labrum.

into a small elongate medial ridge covering the entire epistome.

Mouthparts: Mouthparts elongate.

Mandibles with incisors lateral, toothed. Left lacinia mobilis present, strongly toothed and distally produced.

Maxilla 1 palp articulation absent, distally with short simple setae. Outer plate distally subrectangular, ST in a 6/3 arrangement with two parallel rows: First row with ST 1-5 present, ST 6 absent and ST 7 present. Second row with ST A-C present. Inner plate with shoulder well developed, setae pappopectinate.

Maxilla 2 outer plate gaping and geniculate, setae distally straight. Inner plate with setae-rows A and B appressed together. Rows C and D present.

Maxilliped palp 3-articulate, dactylus absent. Articles 1 and 3 long and weakly setose, article 2 short. Inner plate elongate, 2 nodular setae present. Outer plate with inner and outer setae-row absent.

Distal setae-group present, setae short and simple.

Labrum conspicuously elongate, triangular. Left lobe reduced.

Labium distally narrow, one distal finger present.

Pereopods and coxae: Coxal plates and basis of the pereopods smooth.

Pereopod 1 coxal plate about as deep as basis, basis anterior margin weakly expanded. Pereopod 1 propodus subovate, posteriorly without submarginal row of setae.

Pereopod 2 ischium elongate, distal posterior margin with plumose setae. Propodus subrectangular.

Pereopod 4 coxa locking-structure absent. Basis with long setae on posterior margin, distally with plumose setae on anterior and posterior margins. Ischium with long plumose setae posteriorly.

Pereopod 6 basis posteriorly expanded, medially with a row of long plumose setae. Posterior margin of basis smooth.

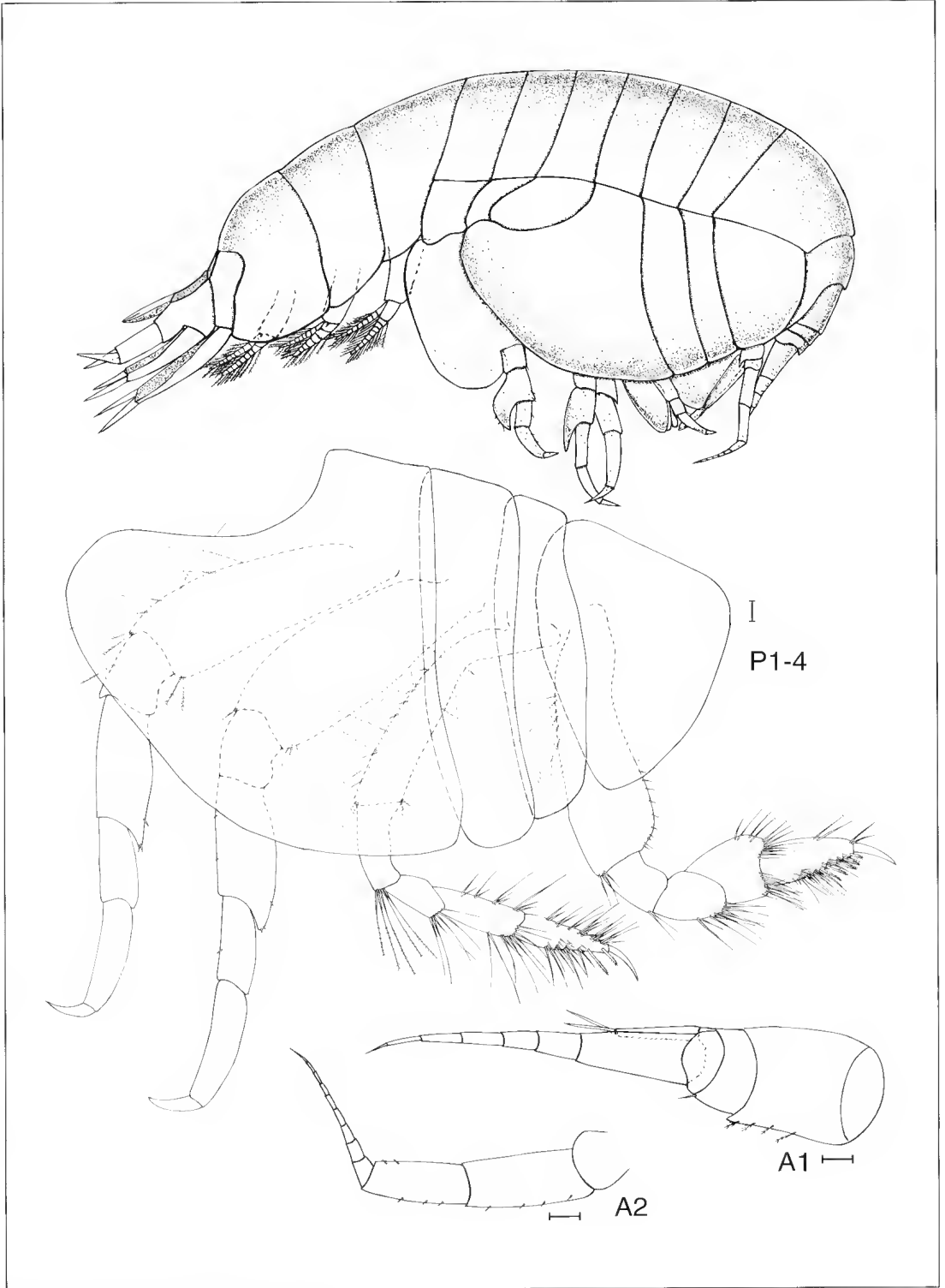


Fig. 5. *Stegocephalina wolf* sp.nov. Holotype.

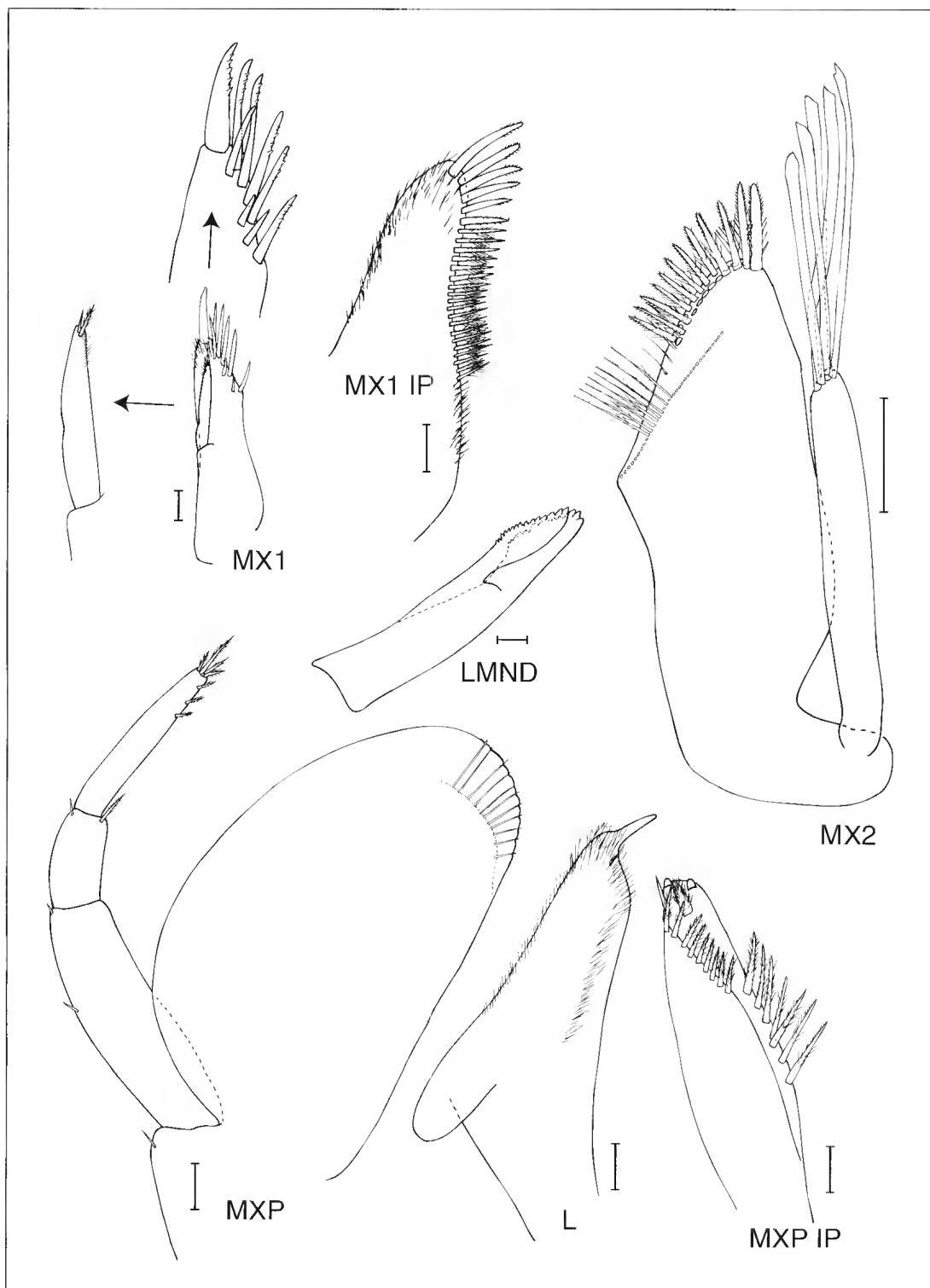


Fig. 6. *Stegocephalina wolf* sp. nov. Holotype.

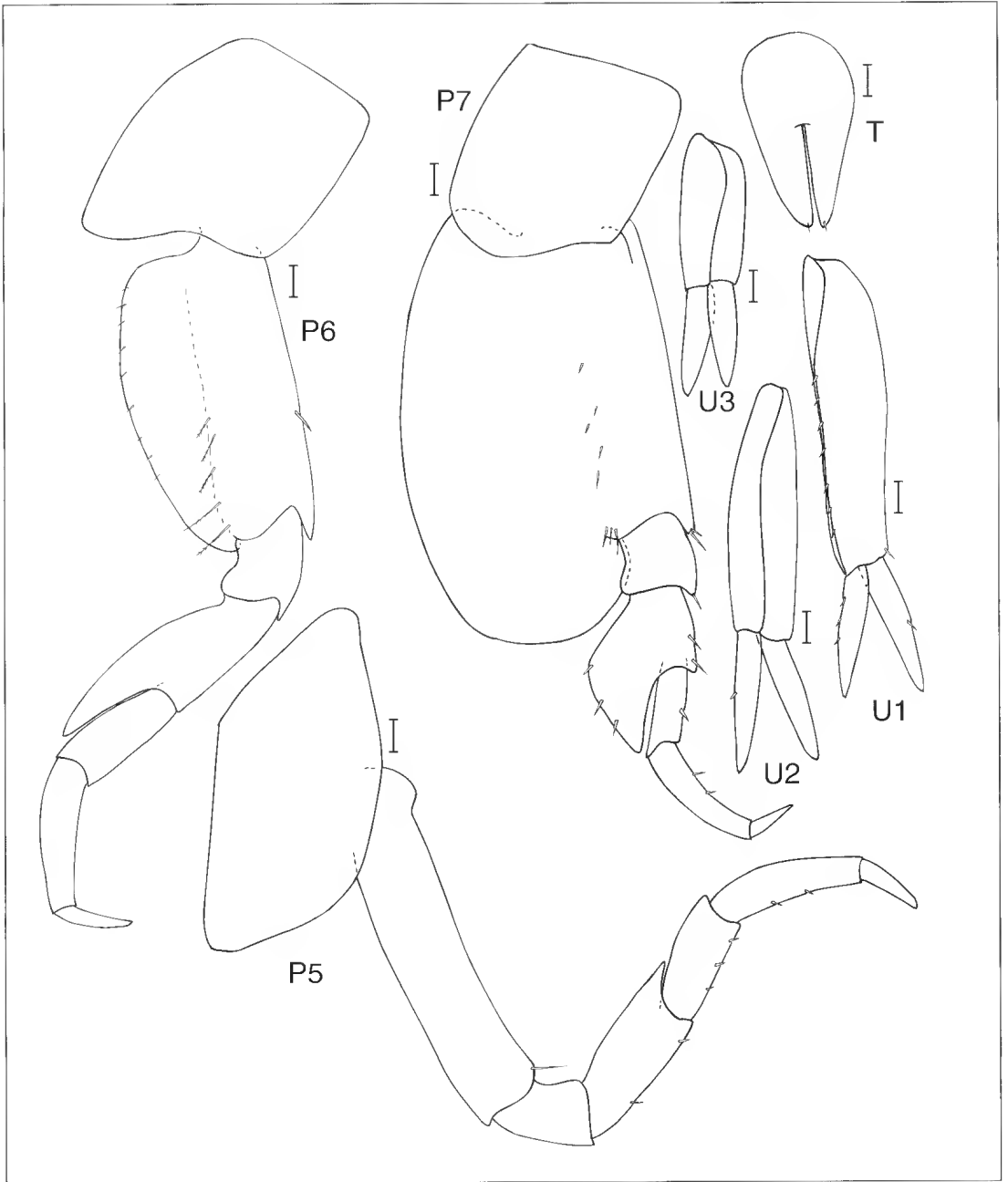


Fig. 7. *Stegocephalina wolf* sp.nov. Holotype.

Pereopod 7 conspicuously different from pereopod 6. Basis posteriorly smooth, medially with a row of short simple setae.

Oostegites and gills: Gills present on pereopods 2-7. Oostegites unknown.

Pleonites: Pleonites 1-3 dorsally smooth. Epimeral plate 3 weakly produced and rounded posteriorly,

serrations absent.

Urosome: Articulation between urosomites 2 and 3 present. Uropod 1 outer ramus with robust setae on outer margin, inner ramus with short robust setae on inner margin. Uropod 2 outer ramus with short robust setae on outer margin. Uropod 3 peduncle not as long as telson, outer ramus 2-articulate.

Telson longer than broad, cleft and rounded distally, submarginal setae on apex present.

Female

Unknown.

Remarks

Stegocephalina wolf is separated from all other stegocephalid species by the combination of 1) the absence of dactylus on the palp of the maxilliped, 2) the fourth article of the peduncle of the second antenna longer than the fifth, and 3) the presence of only one distal finger on the labium.

The present species has close affinities, both phylogenetically and morphologically, to the type species of the genus, *S. ingolffi* Stephensen, 1925. Stephensen (1925:136) wrote that *S. ingolffi* is easily

recognisable e.g. by the long and narrow mouthparts; the same is also true for *S. wolf*. The epistome and mouthparts are in both species conspicuously elongate, projecting well below the coxae. However, the present species differs from *S. ingolffi* in having a considerably shorter article one of the flagellum and only one distal finger on the apex of the labium.

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